

Spike phase-coupling code

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 An abbreviated version of this protocol was published in eLIFE in Nov 2018

TrpV1 receptor activation rescues neuronal function and network gamma oscillations from A β -induced impairment in mouse hippocampus in vitro

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Detailed protocol

Dear Hadi,

Fig 3B and C show the analysis performed to calculate the phase-lock of the action potential (AP) firing of pyramidal neurons to gamma oscillations. To that we simultaneously recorded LFP and patch-clamp recordings as shown in Fig. 3A. Regarding the analysis you asked, LFP recordings were filtered using clampfit and then, using a matlab routine, the instantaneous phase of gamma oscillations was calculating using the Hilbert transformation. The LFP signal displayed on top the AP phase-angle distribution was taken from the filtered recording.

The detail explanation and steps to perform this analysis can be found in "Materials and Methods" section of the paper in the paragraph explaining the spike phase-coupling analysis.

The matlab routine can be downloaded by clicking the link provided in the "Additional files" section at the end of the paper ("Source code 1. Spike phase-coupling code".) We uploaded a copy of this routine as well. Information regarding the analysis can be found also in the file.

Please, contact us for any further question you may have.

Related files

 Spike phase-coupling code.docx



How to cite: (Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. Balleza-Tapia, H. and Fisahn, A. (2020). Spike phase-coupling code. Bio-protocol Preprint. bio-protocol.org/226.
2. Balleza-Tapia, H., Crux, S., Andrade-Talavera, Y., Dolz-Gaiton, P., Papadia, D., Chen, G., Johansson, J. and Fisahn, A. (2018). TrpV1 receptor activation rescues neuronal function and network gamma oscillations from A β -induced impairment in mouse hippocampus in vitro. eLIFE. DOI: [10.7554/eLife.37703](https://doi.org/10.7554/eLife.37703)

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